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Integrated Nutrient Management Affects Fruit Yield of Sapota (*Achras zapota* L.) and Nutrient Availability in a Vertisol

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ABSTRACT

We studied the effect of integrated nutrient management (INM) combinations on supplement of plant nutrient for quantitative and qualitative fruit production in sapota. Thus, 17 combinations of INM practices were evaluated on fruit yield of sapota and nutrient availability in a Vertisol of Chambal region, India. The results demonstrated that almost all treatment combinations comprised of recommended dose of fertilizer (RDF), i.e. 1,000:500:500 g NPK plant^{-1} with application of organic and inorganic sources of nutrients had a significant effect on the fruit yield of sapota, soil microbial biomass, NPK content of leaf, fruit and soil over control (T_1). Among different treatments, application of 2/3rd part of RDF + 50 kg FYM + 250 g *Azospirillum* + 250 g *Azotobacter* plant^{-1} (T_{11}) significantly enhanced the number of fruits plant^{-1} (327.88), yield plant^{-1} (29.03 kg) and yield ha^{-1} (4.52 t). However, the soil microbial count of fungi (8.89 cfu g^{-1} soil), bacteria (11.19 cfu g^{-1} soil) and actinomycetes (5.60 cfu g^{-1} soil) at fruit harvest was higher under the 2/3 of RDF +10 kg vermicompost + 250 g *Azospirillum* + 250 g *Azotobacter* plant^{-1} (T_{15}). The leaf nitrogen content (N, 2.03%) was higher in T_{15}, while phosphorus (P, 0.28%) and potassium (K, 1.80%) content were higher in T_{11}. It is evident that treatment T_{11} increased fruit yield by 32% in Sapota *cv.* Kalipatti compared to control. Therefore, combined application of nutrient sources proved not only beneficial for enhancing fruit yield of sapota but also sustaining soil health in Chambal region of south-eastern Rajasthan.

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